

REMARKS**REGARDING THE AMENDMENTS**

Applicants have in this paper made the following amendments to the claims:

First, independent claims 1, 11 and 19 have been amended to add the phrase “said system further configured to allow replacement of batteries in one of said banks while supplying power to said high frequency inverter from the other battery bank.” By this addition, applicants make it clear that the claimed systems may operate (i.e. provide protection from mains interruption) from one battery bank while the other is disconnected and/or being serviced. The original claims used the language “the connection of both battery banks is not necessary to operate said high frequency DC to AC inverter”, which implies this operation now made clear.

Second, the phrase “wherein each of said banks is organized” is replaced with “wherein said banks are organized”, removing surplus words. By this amendment, applicants clarify what was previously claimed.

Lastly, the phrase “that charges at either a normal rate or a boost rate if batteries are discharged to a minimum voltage level or below” has been added to claims 9, 17 and 19.

Although applicants have amended the claims in a response to office action, they maintain that they have not done so for reasons of patentability but rather for clarity, for reasons given below. Applicants reserve the right to prosecute the subject matter defined by the original claims in a continuing application if they so desire.

Amendments to the drawings:

Applicants have redrawn figure 14 to comply with Office requirements and rearranged that figure to be more easily read while fitting within the margins.

Applicants have modified pages 2, 4-5, 7, 9, 11, 15-19, 21, 24-26, 29, 33 and 35 to eliminate partial textual portions appearing near the corners of the page (for the most part in the upper right corner).

Applicants have provided new pages 14 and 36-40 containing imaged figures. The new drawings are rendered using a newsprint-type dithering process, which applicants expect will reproduce more exactly for publication. It is believed that the Office may scan in monochrome these pages, without performing an additional grayscale to monochrome (dithering) step. (Applicants note the corresponding figures were not well-reproduced in the application publication.)

Applicants have in this paper made the following amendments to the specification:

In paragraph 58 the word “surveillance” has been replaced with “surveillance.”

In paragraph 62 the word “batteries” has been replaced with “input power supply.”

In paragraph 67 the phrase “if the battery is degraded” has been replaced with “they are discharged.”

In paragraph 70 the “TM” after “CTX 9000 Dsi” has been superscripted.

In paragraph 70 the word “in” following “power electronics” has been replaced with “and.”

In paragraph 70 the word “auxilliary” as been replaced with “auxiliary.”

In the table following paragraph 78 the word “aftenuation” has been replaced with “attenuation.”

In the table following paragraph 78 the text “50160” has been replaced with “50/60.”

The abstract has been rewritten to comply with the examiner's requirements and better comply with the guidelines of the Office. By this amendment, applicants make no statement that can be used to interpret or limit the claims.

By the amendments made with this paper, applicants believe no new matter has been added.

ITEMS OF OFFICE ACTION

Applicants now address each item of the office action referenced above, with brief arguments of traversal concerning the claims as constituted for that action:

1. The drawings are objected to because figure 14 has inversed colors. Applicant has provided a replacement sheet of drawings containing a new figure 14 properly formatted to 37 CFR 1.121 (d). Having met this requirement, applicant requests withdrawal of this objection.
2. The abstract of the disclosure is objected to because it contains implied phraseology. Applicant has amended the specification with a new abstract that is believed to meet the requirements of MPEP § 608.01(b). Should the examiner have other requested changes, applicants are open for suggestions. Applicant thereby requests withdrawal of this objection.
3. The disclosure is objected to because of several informalities, including grammar and spelling errors. Applicant has amended the specification to correct the errors noted, and requests withdrawal of this objection.
4. There is no item numbered 4 in the office action.

5. 35 U.S.C. § 103(a) is recited as the basis of all obviousness rejections of the office action.
6. Claims 1, 3-4, 7-11, 13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. Nos. 5,808,376 (“Gordon”) and 5,764,504 (“Brand”) and U.S. Pat. Publ. Nos. 2003/0007369 (“Gilbreth”) and 2003/0202344 (“Kenny”).

Applicants traverse this rejection on the grounds that a prima facie case of obviousness has not been made because:

- (1) The given motivation to combine Gordon with Gilbreth is improper because Gilbreth is non-analogous art to Gordon,
- (2) Kenny does not disclose “two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system], and
- (3) The given motivation to combine Kenny with either of Gordon or Gilbreth is improper because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems

as discussed below. Applicants request reconsideration of the claims, as amended, and allowance thereof.

7. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. Nos. 5,808,376 (“Gordon”) and 5,764,504 (“Brand”) and U.S. Pat. Publ. Nos. 2003/0007369 (“Gilbreth”) and 2003/0202344 (“Kenny”) and further with the Internet page “How Well Do Dogs and Other Animals Hear?”.

Applicants traverse this rejection on the grounds that a prima facie case of obviousness has not been made because:

- (1) The given motivation to combine Gordon with Gilbreth is improper because Gilbreth is non-analogous art to Gordon,
- (2) Kenny does not disclose “two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system],
- (3) The given motivation to combine Kenny with either of Gordon or Gilbreth is improper because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems, and
- (4) The given motivation to combine the Internet page entitled “How Well Do Dogs and Other Animals Hear?” (“Dogs”) with any of Gordon, Gilbreth, Kenny or Brand is insufficient because a reasonable chance of successful improvement has not been shown

as discussed below. Applicants request reconsideration of the claims, as amended, and allowance thereof.

8. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. Nos. 5,808,376 ("Gordon") and 5,764,504 ("Brand") and U.S. Pat. Publ. Nos. 2003/0007369 ("Gilbreth") and 2003/0202344 ("Kenny") and further with U.S. Pat. No. 4,160,571 ("Bigotti").

Applicants traverse this rejection on the grounds that a prima facie case of obviousness has not been made because:

- (1) The given motivation to combine Gordon with Gilbreth is improper because Gilbreth is non-analogous art to Gordon,
- (2) Kenny does not disclose "two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system],
- (3) The given motivation to combine Kenny with either of Gordon or Gilbreth is improper because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems, and
- (4) The given motivation to combine U.S. Patent No. 4,160,571 ("Bigotti") with any of Gordon, Gilbreth, Kenny or Brand is improper because Bigotti is non-analogous art to those references

as discussed below. Applicants request reconsideration of the claims, as amended, and allowance thereof.

9. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. Nos. 5,808,376 (“Gordon”) and 5,764,504 (“Brand”) and U.S. Pat. Publ. Nos. 2003/0007369 (“Gilbreth”) and 2003/0202344 (“Kenny”) and further with U.S. Pat. No. 5,835,364 (“DeWinter”).

Applicants traverse this rejection on the grounds that a prima facie case of obviousness has not been made because:

- (1) The given motivation to combine Gordon with Gilbreth is improper because Gilbreth is non-analogous art to Gordon,
- (2) Kenny does not disclose “two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system], and
- (3) The given motivation to combine Kenny with either of Gordon or Gilbreth is improper because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems

as discussed below. Applicants request reconsideration of the claims, as amended, and allowance thereof.

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. Nos. 5,808,376 (“Gordon”), 5,764,504 (“Brand”), 4,160,571 (“Bigotti”) and 5,835,364 (“DeWinter”) and U.S. Pat. Publ. Nos. 2003/0007369 (“Gilbreth”) and 2003/0202344 (“Kenny”) and further with the Internet page “How Well Do Dogs and Other Animals Hear?”.

- (1) The given motivation to combine Gordon with Gilbreth is improper because Gilbreth is non-analogous art to Gordon,
- (2) Kenny does not disclose “two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system],
- (3) The given motivation to combine Kenny with either of Gordon or Gilbreth is improper because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems,
- (4) The given motivation to combine the Internet page entitled “How Well Do Dogs and Other Animals Hear?” (“Dogs”) with any of Gordon, Gilbreth, Kenny or Brand is insufficient because a reasonable chance of successful improvement has not been shown, and
- (5) The given motivation to combine U.S. Patent No. 4,160,571 (“Bigotti”) with any of Gordon, Gilbreth, Kenny or Brand is improper because Bigotti is non-analogous art to those references

as discussed below. Applicants request reconsideration of the claims, as amended, and allowance thereof.

11. Applicants acknowledge receipt of the references made of record and not relied upon, and the contact information of Examiner Squires.

Applicants now proceed to discuss the elements of the obviousness rejections recited above.

ARGUMENTS IN GENERAL

First, applicants would like to thank Examiner Squires for his efforts. His office action was clear in its arguments, and applicants are well satisfied that the office has met its duty under 37 CFR 1.104(c)(2) to provide the pertinence of each reference, if not apparent, clearly explained. It is a delight to discover that in the office action the examiner has taken the time to note particular portions of the cited references related to the arguments, rather than making mere summary references.

Applicant would like to keep the following instructions of the Office generally in mind:

“To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the

prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP § 2142, page 2100-124.

Applicant's now point out why a prima facie case of obviousness is not made in the arguments of rejection, making arguments that at least one of (1) a suggestion or motivation (2) a reasonable expectation of success or (3) teachings or suggestions of all the claim limitations are absent in reference combinations.

U.S. Patent Publication No. 2003/0202344 (“Kenny”) does not disclose “two banks of batteries [in a] system configured ... such that the connection of both battery banks is not necessary to operate [the system].”

Refer to MPEP § 2143.03, page 2100-133: “All Claim Limitations Must Be Taught or Suggested.”

Kenny is relied upon to disclose “two or more banks of rechargeable batteries where one bank is used for prov[id]ing power and the other battery banks are alternate cells ... used in a sequential manner” (using the words of the examiner) or more specifically to disclose “two banks of batteries, said system configured to receive DC power from either of said banks to [produce power] such that the connection of both battery banks is not necessary to operate [the system]”,

as required by all of claims 1-19. Neither Kenny nor any other cited reference teaches such, and the combination cannot stand to support this point of rejection.

Kenny teaches a solar-powered light that includes a plurality of battery banks, wherein “the battery bank with the peak charge level is used for providing power to the light source until discharged, while the other battery banks serve as alternate cells.” (pg. 3 para. 024.) This is performed to “manag[e] how and when the battery is charged and discharged ... and the useful life of the energy storage device is increased.” Kenny discloses that “energy storage devices” such as “NiMW batteries” and “NiCAD batteries” may be used in the light. (pg. 2 paragraph 0022) As the reader may know, makers of NiMH and NiCd batteries have found that battery life is improved by fully discharging the batteries before charging them. Applicants therefore understand that the multi-battery bank function of the Kenny light is to improve battery life rather than to make the light operable in the absence of one or more battery banks.

Furthermore, Applicant's can find no disclosure in Kenny that the light is operable with a disconnected battery bank. Instead, Kenny discloses that “It should be appreciated that any of the other battery banks are available to power the system at any given time.” Referring to Figure 4 of Kenny, a controller 32 controls “energy discharge control switches” 40, which control which battery bank is supplying power to loads. Kenny discloses that the controller 32 is powered from the battery banks (p. 3 para 0026), which is sensed by the controller by a charge sensor 46 (p. 3.

para. 0030.) Kenny does not disclose that the charge sensor, or any other means, is operable to sense a disconnected battery.

The Kenny light might become inoperable in the absence of a battery bank. For example, it would make sense that a high-impedance voltage sensor would be used for the charge sensor, as that would conserve limited battery resources. That input would have a certain amount of leakage current, however in the presence of a low-impedance battery the voltage at the sensor would be the battery voltage. In the absence of a battery, the sensor would “float”, which could cause the sensor to read erroneously or even at peak voltage. The controller might therefore operate as though the missing bank was populated, possibly with a high degree of charge, and switch thereto. In that event, the light might operate unpredictably or not at all.

It should be further noted that applicant has amended the claims to provide the clarifying language “said system further configured to allow replacement of batteries in one of said banks while supplying power to said high frequency inverter from another of said battery banks.” Kenny does not disclose any means to permit battery replacement while in operation. Indeed, the Kenny light would not be expected to be used as a “high-availability” device. Rather, the batteries would be replaced at a convenient time when other lighting was available.

Finally, for understanding, two banks of batteries are provided in the claimed systems to facilitate the servicing of batteries (i.e. replacement) without taking the power-conditioning system off-

line. Paragraph 0072 of the specification discloses that the system “allows changing or servicing of batteries while the system is in operation”. Paragraph 0074 discloses that “each of the battery modules is removable for service, utilizing ... disconnects per each battery bank.” In the specification table on page 13 the batteries are disclosed to be “hot-swappable.” Paragraph 85 discloses a similar UPQ unit providing that “dual batteries may be included; if so, one battery may be removed or replaced while the other battery supplies power for the UPQ unit with no interruption of power.” For comparison U.S. Pat. No. 5,764,504 (“Brand” cited by the examiner) discloses a UPS system with a bypass/static switch (see fig. 4). To service the electronics of the Brand device, the bypass switch 200 is closed, permitting mains power to pass around the UPS system to the load. In that condition, batteries in stack 160 might be replaced safely. However, no protection is provided from mains power interruption in that condition.

A motivation to combine U.S. Patent Publication No. 2003/0202344 (“Kenny”) with either of U.S. Pat. No. 5,808,376 (“Gordon”) or U.S. Patent Publication No. 2003/0007369 (“Gilbreth”) because Kenny is non-analogous art to Gordon and Gilbreth and because the multi-bank operation of Kenny is incompatible with UPS and/or high-power systems.

MPEP § 2141.01(a), page 2100-122 concerns “Analogous and Nonanalogous Art” and states “In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the

particular problem with which the inventor was concerned.” (reciting *In re Oetiker*, 977 F.2d 1443, 1446.)

Applicants assert that Kenny is non-analogous art to Gordon and Gilbreth, because Kenny is in a different field of invention than Gordon and Gilbreth, and is not reasonably pertinent to the problem of battery service. Gordon discloses a high-voltage (up to 100 VDC) and high-power (1500 VA) UPS device. (See table 1, col. 7 lines 59-63 and col. 14 lines 5-10.) Gilbreth discloses a 30 kWatt system (pg. 4 para. 49) capable of supplying power from “a gas turbine, photovoltaics, wind turbine or other [energy] source” (p. 2 para. 31) to a utility grid (p. 10 paragraphs 162-163). Kenny, on the other hand, discloses a power system for powering one or more light emitting diodes (pg. 3 para. 27 and pg. 5 para. 44) from NiMH or NiCd batteries (pg. 2 para. 22) charged from a solar collector (pg. 2 para. 20). Applicants understand that common LEDs consume about 1 watt or less, even in lighting applications. Because of the large disparity in power, one of ordinary skill in constructing high-power UPS systems would not be motivated to look to the much different field of low-powered solar powered lights for battery servicing techniques.

Also, as mentioned above, the Kenny light appears to utilize NiMH or NiCd batteries, and to extend battery life fully discharges those batteries in an alternating pattern of use. Referring to paragraph 0075 of the specification, “included batteries are preferably a maintenance free lead-acid type.” Lead-acid batteries are better suited for high-power devices because of their higher

energy density (charge/mass) and their relatively low cost. As the reader may well know, completely discharging lead-acid batteries shortens their lifespan. A battery usage pattern according to Kenny would therefore serve to decrease battery life of the preferred battery type in the claimed systems. One of ordinary skill would therefore be unmotivated to combine the multiple-bank battery system according to Kenny with Gordon or Gilbreth, as discharging alternating battery banks would shorten the life thereof.

A motivation to combine U.S. Pat. No. 5,808,376 ("Gordon") with U.S. Patent Publication No. 2003/0007369 ("Gilbreth") is absent because Gilbreth is non-analogous art to Gordon.

Gilbreth is non-analogous art to Gordon. Gordon discloses not merely a power management and distribution system, but is actually an uninterruptible power supply, as the function of the Gordon device is to provide operation of a medical imaging system regardless of the availability of a reliable mains supply. As the examiner has noted, the Gordon device supplies Direct Current at substantially constant voltages to the medical system, and does not include a DC/AC inverter.

Gilbreth on the other hand, does not disclose a UPS system, but rather a system that can supply energy from an energy source 12 to a utility or load 18, also including an energy storage device 20 for operating the system. (A connection to a load rather than a utility is assumed, as power generation to a utility grid requires no protection from interruptions of power quality.) Although Gilbreth initially speaks broadly, the enabled portion of the disclosure quickly devolves into a

utility power system having a turbine as the energy source, and a battery (or battery bank) as the energy storage device. Additionally, in even the most reasonably broad reading of the disclosure, the battery or “energy storage device” does not power the load for any significant period, but rather supplies power to start the turbine and optionally provide transient protection. The battery is disclosed to be “disconnected from DC bus 24 while load/utility grid 10 regulates VDC on DC bus 24” (p. 2 para. 36) “Energy reservoir 64 allows enough power to flow to DC bus 62 to run fuel-metering circuit 42, start the engine, and close the various solenoids.” (p. 4 para. 50) “For stand-alone operation, turbine 206 is started using external DC converter 220 which boosts voltage from a battery (not shown) and connects directly to the DC bus.” (p. 4 para. 60) See also paragraphs 93 and 94 disclosing a “transient” battery “containing a larger energy storage device than the start only battery.”

Gilbreth is not a UPS system, because protection is provided only for transients but not for complete interruptions in power. Applicant asserts that one of ordinary skill would not look to combine references from the field of turbine power generation with another reference from the field of DC-output UPS systems. Additionally, the operation of the Gilbreth system is incompatible with the operation of the Gordon system, because in the Gordon system main power is provided by batteries and in Gilbreth main power is provided by a turbine or similar power source.

A motivation to combine U.S. Patent No. 4,160,571 ("Bigotti") with any of U.S. Pat. No. 5,808,376 ("Gordon"), U.S. Patent Publication No. 2003/0007369 ("Gilbreth"), U.S. Patent Publication No. 2003/0202344 ("Kenny") or U.S. Patent No. 5,764,504 ("Brand") is absent because Bigotti is non-analogous art to those references.

Bigotti discloses a cabinet for storing shoes. Bigotti is, without question, in a different field of invention than any of Gordon, Gilbreth, Kenny or Brand which are in the broad field of electrical or electronic devices. Applicant asserts that one of ordinary skill in the art would not think to look to household cabinets, or more particularly cabinets for storing articles of clothing or other personal items, to find a pair of battery "banks is organized in a front and rear vertical rack, each rack providing access to each individual battery without the removal of other batteries, wherein the front rack may be swung about a pivot point near the bottom of the rack to provide access to the rear rack."

A motivation to combine the Internet page entitled "How Well Do Dogs and Other Animals Hear?" ("Dogs") with any of U.S. Pat. No. 5,808,376 ("Gordon"), U.S. Patent Publication No. 2003/0007369 ("Gilbreth"), U.S. Patent Publication No. 2003/0202344 ("Kenny") or U.S. Patent No. 5,764,504 ("Brand") is absent because a reasonable expectation of successful improvement has not been shown.

The motivation cited by the arguments is "to eliminate the noise being produced by the high frequency DC to AC inverter from the audible hearing range of dogs ... allow[ing] the power management and distribution system to be used in an environment where dogs are present without causing harm to the dogs." This reasoning is flawed for at least two reasons. First, the arguments have not demonstrated that such power systems produce noise that is harmful to dogs (or humans or other animals) in proximity. Second, the arguments have not shown that such power systems are located in proximity to dogs (or people) such that they would be exposed to harmful noise. Absent these two elements, one of ordinary skill would not be motivated to change the PWM frequency as no improvement would be made to the power system. Without a showing of those two elements, the motivation cited is unsupportable.

Applicants present the above arguments of rebuttal, those arguments supporting the belief that the claims as originally filed remain allowable even in light of the Examiner's arguments and cited references. Applicants, by the above amendments and response, seek to be completely

responsive to the office action and request careful consideration of the arguments above and present claims.

Respectfully submitted this 18 day of March, 2005.



Everett D. Robinson
Reg. No. 50,911
PARSONS, BEHLE & LATIMER
201 South Main Street, Suite 1800
Post Office Box 45898
Salt Lake City, Utah 84042
(801) 536-6724

CERTIFICATE OF MAILING

☒ I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 with sufficient postage and is addressed to:

☐ I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on 3/18/2005

Typed or printed name of person signing this certificate:

☒ Everett D. Robinson

☐ _____

Signature  _____

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted the United States Patent and Trademark Office, Fax No. (703) _____ - _____ on _____.

Typed or printed name of person signing this certificate:

☐ Everett D. Robinson

☐ _____

Signature _____